STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

Verso Androscoggin LLC
Franklin County
Jay, Maine
A-203-77-8-A

Departmental
Findings of Fact and Order
New Source Review
License

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., § 344 and § 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Verso Androscoggin LLC
LICENSE TYPE	06-096 CMR 115, Minor Modification
NAICS CODES	322121
NATURE OF BUSINESS	Pulp and Paper Mill
FACILITY LOCATION	Jay, Maine
NSR LICENSE ISSUANCE DATE	November 24, 2009

B. Application Description

Verso Androscoggin LLC (Verso Androscoggin) of Jay, Maine submitted an application dated September 30, 2009 to install additional steam drying capacity on the No. 4 Paper Machine allowing new gradelines of paper to be produced on the machine at normal operating speeds. The project involves the installation of turbulator bars and stationary siphons on seven of the after dryer cans which will utilize an estimated additional 7,000 lbs of steam per hour. The existing machine after dryer section typically uses about 7,000 lbs of steam per hour and on the new gradelines is projected to use approximately 14,000 lbs of steam per hour.

C. Emission Unit Description

The following emission unit is addressed in this air emission license:

Process Equipment

Equipment	Production Rate	Pollution Control Equipment	Stack #
No. 4 Paper Machine	Varies depending on grades of paper produced	Wet Cyclone Separator on Trimvac Trim Conveying System	Various Stacks

D. Application Classification

The modification of a major source is considered a major modification based on whether or not expected emission increases exceed the "Significant Emission Increase Levels" as defined in the Department's regulations.

Total future potential emissions due to the project have been determined by combining the future potential emissions from the No. 4 Paper Machine with projected potential emissions from the additional steam production associated with the Power House based on additional No. 6 fuel oil being combusted in the Power Boilers (#1 and #2).

Pollutant	Potential Emissions Associated with No. 4 PM (TPY)	Potential Emissions Associated with Additional Steam Use (TPY)	Total Potential Emissions (TPY)
PM	25.3	0.8	26.1
PM_{10}	25.3	0.8	26.1
SO_2	31.6	10.2	41.8
NO_x	37.7	2.7	40.4
CO	49.1	0.01	49.1
VOC	40.7	0.06	40.8

The emission increases are determined by subtracting the average actual emissions of the two calendar years preceding the modification from the total potential emissions, as follows:

Pollutant	2007/2008 No. 4 PM Ave. Actual (TPY)	Total Potential Emissions (TPY)	Net Change (TPY)	Sig. Level
PM	22.2	26.1	3.9	25
PM_{10}	22.2	26.1	3.9	15
SO_2	13.6	41.8	28.2	40
NO_x	24.9	40.4	15.5	40
CO	28.3	49.1	20.8	100
VOC	33	40.8	7.8	40

All emission increases are less than the "Significant Emission Increase Levels", therefore, the modification is not a major modification. Based on the above information, this amendment is determined to be a minor modification under *Major and Minor Source Air Emission License Regulations*, 06-096 CMR 115 (last amended December 1, 2005) and has been processed as such.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (last amended December 24, 2005). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas. Verso Androscoggin is not located in a designated non-attainment area.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 CMR 100 (last amended December 24, 2005). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. BPT Determination

The majority of the No. 4 Paper Machine direct fuel fired dryers burn exclusively propane. The exception is the Soft-Nip Calender Roll, which consists of two 7 MMBtu/hr burners combusting No. 2 fuel oil or propane. The only proposed change to the license regarding this emission unit is the change in steam use with the installation of turbulator bars and stationary siphons to supply additional steam to after dryer sections. The mill's existing boilers and turbines will supply the additional steam. Verso Paper anticipates that there will be no actual emissions increase of any VOC or HAP as a result of making the new grade on the machine. The new grade involves the use of additional starch, and there are no quantifiable VOC and HAP emissions associated with the starch use. The actual increase in emissions will occur from the increased use of steam. Steam is supplied from the mill's Power House, and it can be generated from a combination of sources including oil fired power boilers, recovery boilers, a multi fuel boiler, or natural gas fired turbines. Although projected emission increases from the No. 4 Paper Machine and the Power House are included in determining whether the modification is a major modification or not, the No. 4 Paper Machine is the only emissions unit at the facility that is being modified, so it is the only emissions unit that is subject to BACT.

Emission sources from the No. 4 Paper Machine include vents on stock preparation tanks and equipment, white water tanks, headboxes, forming sections, vacuum systems, dryers, winders, and coaters. Potential emission sources from the dry end include dryer and building vents around the calendering and winding areas. Vent and exhaust gases from the paper machine area mainly consist of air and water vapor. Regulated pollutants emitted from this source mainly include VOCs and PM and if fuel fired dryers are used then combustion pollutants such as CO, NO_x and SO_2 are also emitted. A summary of the BACT determination for the No. 4 Paper Machine is the following:

1. Particulate Matter (PM & PM_{10})

Exhaust gases from paper machines often contain trace amounts of particulate matter (PM). The quantity of PM is difficult to measure due to the low PM concentrations and high exhaust gas flow rates (NCASI 2008). In the No. 4 Paper Machine, PM is generated from the Trimvac Trim Conveying System, from the combustion of No. 2 fuel oil and propane for the Soft-Nip Calender Roll, and from the propane or natural gas combustion in the Infra-Red Dryers and Air Flotation Dryer. Verso Paper does not use add-on control technology to control emissions of PM from the paper machine dryers and calender rolls. A wet cyclone separator is used to collect PM emissions from the Trimvac Trim Conveying System on the No. 4 Paper Machine.

Because of the high volume and high moisture content of paper machine vent exhaust gases, control techniques for these vents are considered impractical. Wet scrubbers have been employed to control PM emissions from tissue creping operations on Yankee dryers (NCASI 2008); however, this operation is not conducted at Verso Paper.

Because there are no technically feasible technologies to control PM emissions from the paper machines, the Department finds that the No. 4 Paper Machine is receiving BACT through the use of propane, natural gas, and distillate fuels in the direct-fired dryer systems as well as through the use of the wet cyclone separator for PM emissions generated by the Trimvac Trim Conveying System. BACT also includes continuing to meet a PM emission limit of 1.7 lb/hr from the Soft-Nip Calender Roll, a PM emission limit of 0.5 lb/hr from the Infrared Dryers, a PM emission limit of 0.4 lb/hr from the Air Flotation Dryers.

2. Sulfur Dioxide (SO_2)
Emissions of sulfur dioxide (SO_2) from the No. 4 Paper Machine are attributable to the oxidation of sulfur compounds contained in the No. 2 fuel oil and propane used in the Soft-Nip Calender Roll and propane and natural gas use in the Infrared Dryers and Air Flotation Dryers on No. 4 Paper Machine. SO_2 emissions from these sources are currently uncontrolled and are minimal since low sulfur content fuels are used.

No SO_2 emission control technologies can be identified that may be considered technically feasible for application to these units. This is consistent with the findings regarding control technologies employed at other "on-machine" paper machine coater dryer units. Because there are no existing technically feasible control technology alternatives, the Department finds that the No. 4 Paper Machine is receiving BACT through the combustion of propane, natural gas, and distillate fuels for SO_2 emissions. In addition, BACT includes continuing to meet a SO_2 emission limit of 7.1 lb/hr from the Soft-Nip Calender Roll, a SO_2 emission limit of 0.01 lb/hr from the Infrared Dryers, and a SO_2 emission limit of 0.1 lb/hr from the Air Flotation Dryers.

3. Nitrogen Oxides (NO_x)
Emissions of nitrogen oxides (NO_x) are attributable to the oxidation of nitrogen in the combustion air and of nitrogen compounds contained in the No. 2 fuel oil and propane used in the Soft-Nip Calender Roll and propane and natural gas use in the Infrared Dryers and Air Flotation Dryers on No. 4 Paper Machine. NO_x emissions from these sources are currently uncontrolled and are minimal since clean burning fuels are used.

No NO_x emission control technologies can be identified that may be considered technically feasible for application to the No. 4 Paper Machine. This is consistent with the findings regarding control technologies employed at other "on-machine" paper machine coater dryer units. Because there are no existing technically feasible control technology alternatives, the Department finds that the No. 4 Paper Machine is receiving BACT through the combustion of clean burning fuels for NO_x emissions. In addition, BACT includes continuing to meet a NO_x emission limit of 4.2 lb/hr from the Soft-Nip Calender Roll, a NO_x emission limit of 2.4 lb/hr from the Infrared Dryers, and a NO_x emission limit of 2.0 lb/hr from the Air Flotation Dryers.

4. Carbon Monoxide (CO)

Emissions of carbon monoxide (CO) are attributable to the incomplete combustion of organic compounds contained in the No. 2 fuel oil and propane used in the Soft-Nip Calender Roll and propane and natural gas use in the Infrared Dryers and Air Flotation Dryers on the No. 4 Paper Machine. Additionally, CO may be generated from the incomplete oxidation of organic compounds contained in the coating formulations that are evaporated in the dryers.

No CO emission control technologies can be identified that may be considered technically feasible for application to the No. 4 Paper Machine. This is consistent with the findings regarding control technologies employed at other "on-machine" paper machine coater dryer units. Because there are no existing technically feasible control technology alternatives, the Department finds that the No. 4 Paper Machine is receiving BACT through the combustion of clean burning fuels for CO emissions. In addition, BACT includes continuing to meet a CO emission limit of 4.2 lb/hr from the Soft-Nip Calender Roll, a CO emission limit of 3.8 lb/hr from the Infrared Dryers, and a CO emission limit of 3.2 lb/hr from the Air Flotation Dryers.

5. Volatile Organic Compounds (VOC)

Emissions of VOCs from the No. 4 Paper Machine can be attributed to many different sources. VOCs are present in the water carrying the pulp to the paper machine and dryers and can be released as the water is removed from the sheet. VOCs are sometimes present in papermaking additives (defoamers, slimicides, retention aids, wet strength agents, wire and felt cleaners, etc.) and can be released in the papermaking process (NCASI 2008). On paper machines with direct fired dryers, VOCs are emitted from the combustion of the fuel burned in those units. The application of coatings to form the paper substrate is also a source of VOCs. Emissions of VOCs from the No. 4 Paper Machine are currently uncontrolled.

In general, control techniques for control of VOCs from paper machine vents are considered impractical because of the high moisture content and high volume of the vent exhaust gases and the minimal pollutant concentrations. However, consideration has been given to the control of VOC emissions from the No. 4 Paper Machine through capture and venting to a device such as a thermal oxidizer, adsorber, condenser, wet scrubber, or biofilter.

The additional emission reduction achieved by thermal oxidation has negative environmental and economic costs associated with it. Thermal oxidizers generate additional air emissions as a result of the need to burn auxiliary fuel to sustain combustion chamber temperatures for effective thermal oxidation. The cost associated with installing and operating a thermal oxidizer of a size appropriate to effectively handle a high volume, high moisture, low VOC emissions content stream would be high. In addition, the technical feasibility of a thermal oxidizer is considered questionable given the substantial moisture present in this emission stream and the highly variable nature of this stream in terms of flow rate, temperature, and VOC concentration.

The technical feasibility for an adsorber for this application is questionable, primarily because there are no available types of adsorption media that are capable of achieving effective control of the mixture of VOC compounds that are considered likely to be present in the emissions from the units associated with the papermaking operations. Certain types of compounds that may be present in the emission stream could even react with or bond to most of the commercially available types of adsorbents, rendering the media ineffective in emission reduction and a possible fire hazard.

The use of a condenser is not technically feasible for this application because the concentration of VOC in the emissions stream would likely be too low and the moisture content of the emissions stream would be too high for effective control by a condenser.

Wet scrubbing is not considered to be technically feasible for this application because there are no available types of absorption media that are capable of achieving effective control of the mixture of VOC compounds that are considered likely to be present in the emissions from the units associated with the papermaking operations.

Biofiltration is not considered technically feasible for this application, because it is not suitable for an emission stream containing the types of pollutant compounds considered likely to be present in the emissions from the No. 4 Paper Machine. Some pollutants could be poisonous to the bacteria and/or would damage the filtration media. In addition, biofiltration systems require uniform and consistent humidity. The moisture content of paper machine

vents vary from the wet end to the dry end of the machine. This variation in moisture levels in the exhaust streams results in uncertainty that the humidity of the emission stream can be maintained at a level that is necessary to sustain the bacteria in the biofilter.

In the development of the pulp and paper industry Maximum Achievable Control Technology (MACT) standards for papermaking operations, the Environmental Protection Agency (EPA) concluded that no emission controls or emission limits for existing or new papermaking operations are warranted (NCASI 2008).

Because there are no existing control technology alternatives that can be considered more effective for the No. 4 Paper Machine than the existing system, the Department finds that the No. 4 Paper Machine is receiving BACT for the control of VOC emissions. In addition, BACT includes continuing to meet a VOC emission limit of 1.4 lb/hr from the Soft-Nip Calender Roll, a VOC emission limit of 1.0 lb/hr from the Infrared Dryers, and a VOC emission limit of 0.8 lb/hr from the Air Flotation Dryers.

C. Annual Emissions

The proposed changes will result in no changes to any of the annual emission limits currently contained in Verso Androscoggin's Air Emission Licenses, including any amendments.

III. AMBIENT AIR QUALITY ANALYSIS

Verso Androscoggin previously submitted an ambient air quality analysis demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards. Neither short term nor long term emission limits of the air pollutants which have been addressed in previously submitted ambient air quality demonstrations will increase as a result of the minor modification being addressed in this license. Therefore, no additional demonstration is required for this license.

ORDER

Based on the above Findings, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-203-77-8-A pursuant to the preconstruction licensing requirements under 06-096 CMR 115, which allows Verso Androscoggin to install and operate the equipment to deliver additional steam drying capacity to the No. 4 Paper Machine as described in its application and in the findings of fact of this license amendment. This amendment warrants no new license conditions. Verso Androscoggin shall continue to be subject to the standard and special conditions listed in their initial Part 70 License, A-203-70-A-I, and in any subsequent Part 70 or New Source Review licenses and amendments.

DONE AND DATED IN AUGUSTA, MAINE THIS 24th DAY OF November 2009.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: James P. Brooks for
DAVID P. LITTELL, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: October 1, 2009
Date of application acceptance: October 8, 2009

Date filed with the Board of Environmental Protection: _____

This Order prepared by Eric Kennedy, Bureau of Air Quality.